

Define:**Distance:**

A distance must include: (circle all that apply) a number, a unit, a direction

Displacement:

A displacement must include: (circle all that apply) a number, a unit, a direction

Distance and Displacement

For each question **sketch the scenario.**

Draw the displacement arrow.

- Joey drives his car 7 kilometres west. He stops for lunch and then drives 5 kilometres east. What distance did he cover? What was his displacement?

Sketch and displacement arrow	Distance	Displacement

- Anthony walks to the pizza place for lunch. He walk 1 km east, then 1 km south and then 1 km west. What distance did he cover? What was his displacement?

Sketch and displacement arrow	Distance	Displacement

- On his fishing trip Justin takes the boat 12 km south. The fish aren't biting so he goes 4 km back east. What distance did he cover? What was his displacement?

Sketch and displacement arrow	Distance	Displacement

- Preston goes on a camel safari in Africa. They he travels 5 km north rests then 3 km North rests and then 1 km north again. What distance did he cover? What was his displacement?

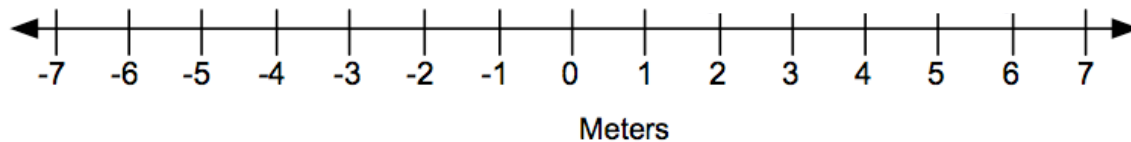
Sketch and displacement arrow	Distance	Displacement

NAME _____

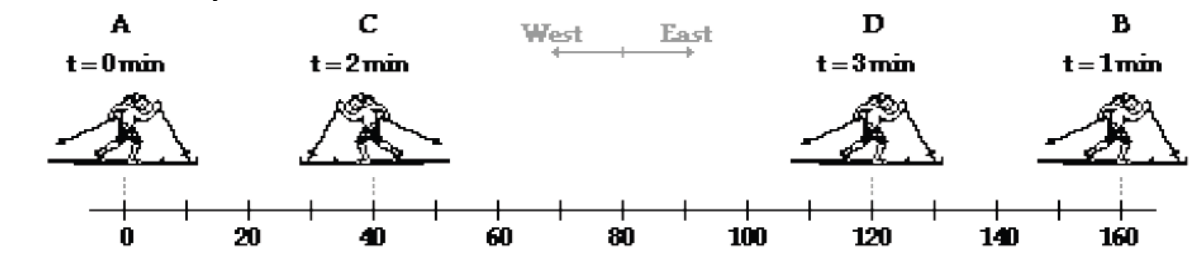
Period _____

5. On the scale below label the positions:

A ladybug is sitting at $X_1 = 1$. She begins walking in the forward direction. She walks 4 m forward to x_2 . She then moves backward to position -3m, this is her final position.

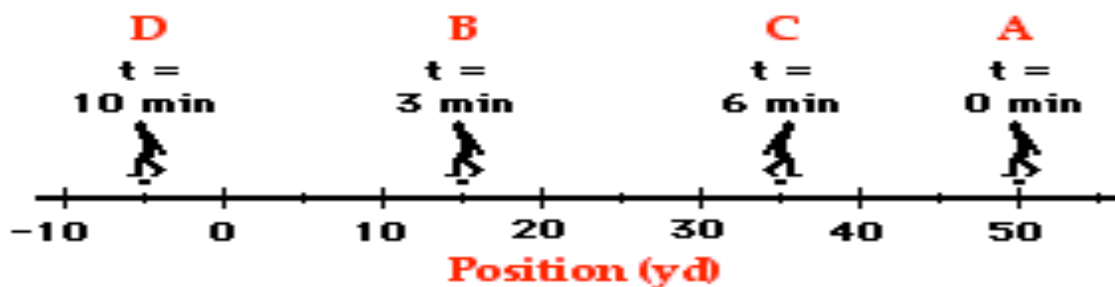


6. A cross-country skier moves from location A to location B to location C to location D.



- What is the total distance traveled by the skier?
- What is the displacement of the skier?

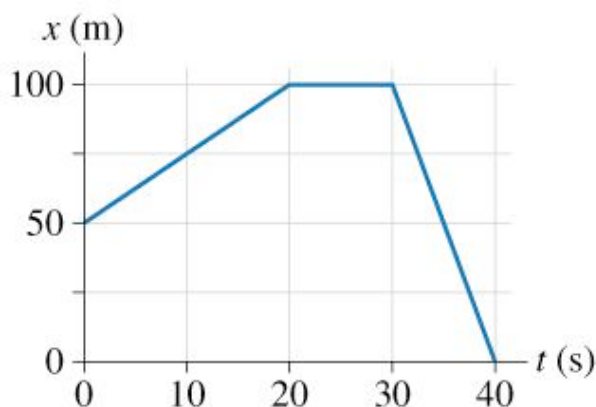
7. Consider a football coach pacing back and forth along the sidelines. The diagram below shows several of coach's positions at various times. At each marked position, the coach makes a "U-turn" and moves in the opposite direction. In other words, the coach moves from position A to B to C to D.



- What is the total distance the coach traveled?
- What is the total displacement of the coach?

GRAPHING – position versus time graph**Interpreting an objects motion using a graph:**

8. What can you tell about an objects motion if you see a flat link (zero slope)?
9. What can you tell about an objects motion if you see a constant negative slope?
10. What can you tell about an objects motion if you see a constant positive slope?
11. If you were comparing two motions on the same graph.... What would a steeper slope mean? What would a more shallow slope mean?



- 12 a. Break the graph up into sections and describe the objects motion

A-> _____

B-> _____

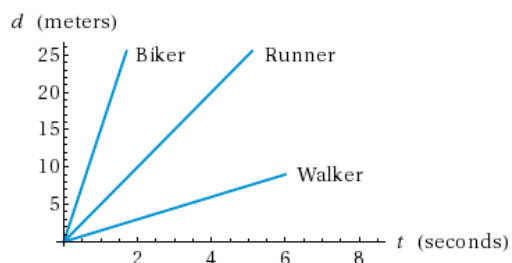
C-> _____

- b. Calculate the objects **total distance** traveled:

d= _____

- c. Calculate the objects **total displacement**:

Δx = _____



- 13 Looking at the graph to the left, which person is

a. The fastest?

b. The slowest?

Speed and Velocity:
Fill in the equations below

$S = \frac{d}{t}$ $d = S \times t$ $t = \frac{d}{S}$

$V = \frac{\Delta x}{t}$ $\Delta x = V \times t$ $t = \frac{\Delta x}{V}$

Complete the following problems:

14. Find the average speed (in m/s) of a bicycler that starts in town, pedals 1200 meters north of town after 30.0 minutes.

Given	Equation	Work	Answer

15. A hiker is at the bottom of a canyon. She shouts to her friend who is 280.5 meters away from her. The sound of her voice travels at 340 m/s. How long will it take for her friend to hear her shout?

Given	Equation	Work	Answer

16. A school bus takes 0.53 hours to reach the school from your house. If the average velocity of the bus is 19km/h west, what is the displacement of the bus during the trip?

Given	Equation	Work	Answer

17. Billy drives his car at 100.0 km North for 2.0 hour, then 50.0 km South for 1.0 hour. Find Billy's average velocity.

Given	Equation	Work	Answer